Commonly used medicinal Plants

Aralu: *Terminalia chebula* Retz.

- **Haritaki:** "that which removes diseases" (Harati rogam) or "that which possesses a yellow or green hue“
- **Abhaya:** "fearless." It is believed to remove the fear of disease and death, and acts as a safe, nontoxic detoxifier.
- **Pathya:** Means "good for the pathways/channels of the body." It signifies its ability to regulate digestion and normalize bowel movements.
- **Shiva:** Signifies the auspicious and sacred nature of the herb.
- **Vayastha:** Means "one who sustains the body." It reflects its properties as a powerful anti-aging *Rasayana*.
- **Vijaya:** Means "the victorious," honoring its ability to conquer illnesses.
- **Amrita:** Translates to "nectar of immortality," linked to the mythological belief that it originated from drops of ambrosia.
- **Rohini:** Means "healing or causing to grow," highlighting its ability to heal wounds

(a)
(b)
(c)
(d)

Nomenclature

- **Kingdom:** Plantae (Plants)
- **Phylum:** Tracheophyta (Vascular plants)
- **Class:** Magnoliopsida (Dicotyledons)
- **Order:** Myrtales
- **Family:** Combretaceae
- **Genus:** *Terminalia*
- **Species:** *T. chebula*
- .

Morphology

Medium-sized deciduous tree
Grows up to **30 m** in height

Leaves:

- Alternate or sub-opposite
- Oblong-ovate
- Acute apex (tip)
- Cordate base
- Glabrous on upper surface
- Yellowish pubescence on lower surface , Has two small nodes at the base of the leaves

Fruits:

- Drupe-like
- Glabrous and smooth
- Ellipsoid to ovoid
- Yellow to orange-brown
- Five longitudinal ridges

Flowers:
Monoecious

- Dull whitish-yellow
- Strong unpleasant

Seeds:

- Globose

Main chemical constituents

- **Hydrolysable Tannins:** These make up roughly 32–40% of the fruit's dry weight.
- Key compounds include:**Chebulinic acid** and **Chebulagic acid** (Major bioactive markers)
- Corilagin, Casuarinin, and Punicalagin
- Chebulanin, Neochebulinic acid, and Terchebulin
- **Phenolic Acids:** primarily **gallic acid** and **ellagic acid**.
- **Flavonoids:** Includes antioxidant compounds such as **rutin**, **quercetin**, and **kaempferol**

Ayurveda Pharmacological properties

Rasa (Taste)	• Five tastes except salt • Predominantly astringent (Kashaya)
Guna (Qualities)	• Laghu (light) • Rooksha (dry)
Vipaka (Post-digestive Effect)	• Madhura (sweet post-digestive effect)
Veerya (Potency)	• Ushna (hot potency)

Actions of the plant-**Therapeutic Properties (Karma)**

Varnya	• Improves skin complexion
Ushna	• Hot in nature
Sara	• Promotes bowel movement
Medhya	• Enhances intelligence, memory, and concentration
Doshaghna	• Natural detoxifying action
Lekhaniya	• Fat-reducing (scraping) property
Shothanut	• Relieves inflammation
Deepana	• Enhances digestive fire and appetite
Pachana	• Aids digestion
Chakshushya	• Beneficial for eyes; improves vision
Rasayana	• Rejuvenative and anti-aging
Ayushya	• Promotes longevity
Bruhmani	• Nourishing; supports healthy body weight
Anulomani	• Regulates bowel movements

Research findings of Aralu

Metabolic & Cardiovascular Health:

- Studies indicate it can help manage type 2 diabetes by improving insulin sensitivity, downregulating carbohydrate-hydrolyzing enzymes, and protecting pancreatic tissue.
- Research also points to its ability to lower LDL cholesterol, increase HDL, and support blood pressure regulation.

Antimicrobial & Antiviral Properties:

- T. chebula exhibits broad-spectrum activity against various pathogens, including bacteria associated with dental infections and gastrointestinal issues like Helicobacter pylori.

Neuroprotective Potential:

- Emerging research explores its role in mitigating mild cognitive impairment and protecting brain cells from oxidative damage and aging.

Anti-arthritic Activity:

- Extracts have shown promise in reducing joint inflammation, synovial hyperplasia, and other symptoms of rheumatoid arthritis in animal models.

Skin Care & Anti-aging:

- Due to its high antioxidant profile, it is frequently studied for its ability to reduce oxidative stress, prevent pigmentation, and support overall skin health

Bulu- Terminalia bellirica

- **Scientific Name: *Terminalia bellirica* (Gaertn.) Roxb.**
- **Family:** Combretaceae

Morphology

It is a tree that grows up to a height of 60 -80 feet.

The fruit

- resembles Haritaki fruit but it does not contain the ridges.

Leaves-

- simple, alternate, elliptic or elliptic obovate, long petiole, crowded at shoot tip, leathery, both surface pubescent when y ity.

Flowers

- small, greenish yellow in axillary spikes
- a strong offensive smell.

Fruit

- a drupe,obovoid, gray in color, slightly 5 rid

Pharmacological properties of Bulu

- Rasa (Taste) - Kashaya (Astringent)
- Guna (qualities) - Rooksha (dry), Laghu (light to digest)
- Vipaka (taste conversion after digestion) -Madhura (sweet)
- Veerya (potency) - Ushna (hot)

Actions

Bhedanam	• Eases motion, has laxative action.
Kasanashanam	• relieves cough, cold
Netrahitam	• good for eyes
Keshya	• improves hair quality and promotes hair growth.
Kruminashanana	• relieves worm infestation
Vaisvaryanashana	• relieves hoarseness of voice
Bibhitaki detoxifies blood, lymph, muscles and fatty tissue of the body.	

Research Findings

Uric Acid Reduction & Gout Management

- One of the most notable clinical discoveries is *T. bellirica's* ability to treat hyperuricemia (high uric acid).
- **Mechanism:** Human clinical trials show that standardized fruit extracts safely **reduce elevated serum uric acid levels by nearly 20%**.

Kidney Protection:

- Research notes that it inhibits xanthine oxidase (the enzyme responsible for producing uric acid). It concurrently lowers creatinine markers, thereby offering significant protection to kidney function.

2. Antidiabetic & Metabolic Support

- *T. bellirica* demonstrates powerful regulatory effects on glucose metabolism
- **Insulin Regulation:** Aqueous extracts significantly stimulate dose-dependent insulin secretion from pancreatic cells.
- **Enzyme Inhibition:** In vitro models show it actively inhibits **alpha - amylase**, slowing down carbohydrate digestion. *In vivo* animal model have proven that a high dose reduces fasting blood glucose, decrease glucose tolerance, and lowers glycohemoglobin (HbA1c) levels.

3. Gastrointestinal & Antispasmodic Activity

- Science supports its classical use as both a digestive harmonizer and an anti-diarrheal agent.
- **Motility Regulation:** Crude extracts exhibit a dual mechanism—they relax spontaneous gut contractions (acting as an antispasmodic) while delaying the onset and reducing the severity of diarrhea. This makes it highly effective for irritable digestive tracts.

4. Hepatoprotective (Liver-Protecting) Value

- The fruit extract exerts a robust defensive shield over liver tissues.
- **Toxin Defense:** In studies evaluating chemical-induced liver damage (such as from (CCl_4), pre-treatment with *T. bellirica* significantly **restores liver function markers**.
- It normalizes elevated levels of ALT, AST, ALP, and bilirubin by reducing hepatic lipid peroxidation and oxidative stress.

5. Potent Antioxidant & Anti-Inflammatory Effects

- **Free Radical Scavenging:** Due to its dense concentration of phenolcarboxylic and tannic acids, it enhances the body's natural antioxidant enzymes. It blocks pro-inflammatory enzymes and cellular mediators, slowing down the oxidative cell damage linked to chronic respiratory and cardiovascular conditions.

6. Combating Antibiotic Resistance

- **Synergistic Action:** Recent studies indicate that *T. bellirica* fruit extracts possess direct antimicrobial properties. When paired concurrently with conventional antibiotics, they create additive or synergistic blockades against highly resistant strains like **Methicillin-resistant *Staphylococcus aureus* (MRSA)** and *Salmonella*.

Nelli

- **Kingdom:** Plantae
- **Division:** Tracheophyta
- **Class:** Magnoliopsida
- **Order:** Malpighiales
- **Family:** Phyllanthaceae
- **Genus:** Phyllanthus L.
- **Species:** *Phyllanthus emblica*

Morphological features

Tree and Bark

- **Size:** Grows 8 to 18 meters tall.
- **Trunk:** Crooked with spreading branches.
- **Bark:** Smooth, pale grayish-brown.
- **Peeling:** Flakes off in irregular patches.

Leaves

- Closely set in two ranks.
- pinnate leaf.
- Linear-oblong and obtuse, up to 2 cm long.
- Light green, turning reddish before shedding.

Flowers

Type: Small, greenish-yellow, and unisexual.
Clusters: Form densely along the leaf axils.
Male flowers: Numerous, borne on short stalks.
Female flowers: Fewer, sitting directly on the stem.

- **Fruits**
- Nearly spherical, hard, fleshy drupe.
- 1.5 to 2.5 cm in diameter.
- Smooth, shiny, pale yellow or greenish.
- Marked with 6 faint vertical lines (striations).
- Extremely sour, bitter, and astringent.
- **Seeds**
- Exactly 6 seeds per fruit.
- **Internal Structure:** Housed in a 3-valved, 6-sided hard stoney nature.

Nelli- Pharmacological properties

Guna (qualities)

- Guru - heaviness, Sheeta – coolant

Rasa (taste) - Has five tastes.

- sour, sweet, bitter, astringent and pungent (all the five tastes,excluding salt). Sour is the dominant taste.
- Emblica officinalis have sweetness as its primary taste and sourness and astringent as secondary

Vipaka :

- Madhura (sweet)

Veerya (potency):

- Sheeta (cold)

Effect on Tridosha:

- Tridoshahara - It balances all the three Doshas.

The fruits

- gooseberry

Medicinal value of Nelli

Tridoshic Balance:

- It balances *Vata* (due to its sour taste), *Pitta* (due to its sweet taste and cooling energy), and *Kapha* (due to its astringent and dry properties).

Digestive Fire (*Agni*):

- Amla stimulates digestion without aggravating *Pitta*, making it highly effective for clearing excess heat and inflammation from the digestive tract.

Rejuvenation:

- It is considered *Vayasthapana* (anti-aging), nourishing blood, bones, and reproductive organs.

Hair & Skin:

- It strengthens hair follicles, prevents premature greying, and promotes a clear, glowing complexion by purifying the blood.

Immunity:

- Its high concentratio
naturally occ
vitamin C an
antioxidants
protects the
from oxidativ
and enhance
immune resp

Research findings

Antioxidant activity

- Methanol extracts showed **strong radical scavenging ability** (IC_{50} ~39 µg/mL).
- Elevated antioxidant enzymes (catalase, superoxide dismutase, glutathione peroxidase) in rat models.
- Compounds like **gallic acid, kaempferol, rutin, quercetin** contribute to this effect.

Anti-inflammatory effects

- Ethanolic extracts inhibited **nitric oxide (NO) production** and **COX-2 enzyme activity** in macrophages.
- Mechanism: suppression of COX-1, COX-2, and 5-LOX pathways, reducing pro-inflammatory mediators.

Immunomodulatory properties

- Increased **CD4, CD8, IgM, IgG, albumin, and globulin levels** in animal studies.
- Enhanced antibody titers and lymphocyte distribution, showing **immune-boosting potential**.

Antidiabetic activity

- Ethanolic extract reduced blood glucose in diabetic rats from **380 mg/dL to 166 mg/dL**.
- Mechanisms: inhibition of digestive enzymes, stimulation of glycogen storage, activation of insuli signaling, and prevention of advanced glycation end-products (AGEs).

Hepatoprotective effects

- Aqueous extracts reduced **hepatic steatosis and fibrosis** in NAFLD models.
- Improved lipid metabolism and oxidative stress markers via **gallic acid and adiponectin regulation**.

Neuroprotective potential

- Flavonoid-rich extracts may protect neurons from **oxidative stress and amyloid-beta toxicity**.
- Suggested benefits in **Alzheimer's and Parkinson's disease models**

Tippili-

- Botanical Name- Piper longum Linn.
- Family- PIPERACEAE
- Vernacular Names- Hindi- Pipala; English- Long pepper
- Synonyms-
  - Kana, Krsna, Kola, Capala, Tiksna Tandula, Magadhi, Vaidehi, Usana, Soundi

Morphological features

Stem:	• Creeping and jointed, with woody perennial roots and thickened nodes.
Leaves:	• Alternate, smooth, and heart-shaped (cordate), varyin from broadly ovate at the base to oblong-oval at the t
Inflorescence:	• Dense, unisexual spikes. Male spikes are longer and slender, while female spikes are short, stout, and cylindrical. Flowers in rainy season and fruits in autum
Fruit:	• small, ovoid berries deeply embedded in a fleshy, cone like spike. They are shining dark green when young, turning blackish-green to dark brown when mature

Distribution- Found in the hotter parts of India, from central Himalayas to Assam, Khasi an Mikir hills. Also found in forests of western ghats from Konkan to Kerala

- **Major Chemical Constituents-**
- Essential oil, mono- and sesquiterpenes, caryophyllene (mainly), piperine, piplartine, piperlongumine, piperlonguminine, pipernonaline, piperundecalidine, pipercide, sesamin, B-sitosterol; four aristolactams (cepharanone B, aristolactum AII, piperlactum A and piperolactam B); five 4,5-dioxoaporphines etc.
- Ayurveda Pharmacological Properties
- **Rasa** Katu
- **Guna** Laghu, Snigdha,
- **Virya** Usna (Ardra-Sita) Tiksna (Ardra-Guru)
- **Vipaka** Madhura
- **Karma** Vata-Slesmahara (Ardra-Kapha vardhaka), Dipana, Vrsya, Rasayana
- Indications- Udara, Pliharoga, Jvara, Kustha, Prameha, Gulma, Arsas, Sula, Amavata

Therapeutic Uses-

- (1) Kamala- Pippali is used as Nasya and Anjana
- (2) Rasayana- Ghee prepared with Pippali & milk will be useful
- (3) Chardi-
- (4) Svasa-

Part Used-

- Fruit, root

Dosage-

- Powder 0.5-1 g

Preclinical Research (In Vivo & In Vitro Studies)

- Animal modeling and cellular assays provide structural data on *Piper longum*'s underlying mechanisms

Pharmacological Focus	Model Used	Key Research Findings
Neuroprotection & Alzheimers	Mouse Models (STZ/Res)	Amide alkaloids (piperine, piperlongumine) showed strong protective effects against **cognitive decline, memory deficiency, and neuroinflammation**.
Antidepressant & Anxiety	Corticosterone / Chronically Stressed Mice	Piperine acted on Central nervous system to suppress anxiety and depression-like behavior.

Spasmolytic (Antispasmodic)	**Isolated Rat Fundus / Rabbit Jejunum**	**Extracts demonstrated concentration-dependent suppression of 5-HT-induced contractions, proving its muscle-relaxing efficiency.**
Metabolic / Anti-Diabetic	Enzyme Inhibition Assays	Leaves and fruit extracts exhibit strong, dose-dependent **α-amylase and α-glucosidase inhibition**, vital for regulating blood sugar.
Anti-Inflammatory	Rat Cerebral Ischemia Models	Organic fractions significantly **downregulated inflammatory cytokines** (IL-1β, IL-6, and TNF-α) while upregulating protective superoxide dismutase (SOD).

Clinical Research (Human Studies) - Tippili

Clinical trials on humans primarily focus on respiratory conditions, traditional safety thresholds, and bioenhancement capabilities.

Respiratory and Cough Management:	• Newly developed herbal cough syrups containing *Piper longum* fruit extract confirmed significant **antitussive (cough-suppressing) properties**. Patients with acute, subacute, and chronic coughs (including individuals with asthma and bronchitis) showed marked improvements in symptoms.
Acute Respiratory Infections (ARIs):	• A randomized controlled trials reported that *Piper longum* effectively **reduces the frequency of cough bouts**, sputum production, wheezing, throat infections, and associated sleep disturbances, presenting minima to no side effects.
Safety and Toxicity Profiles:	• Patients taking 4 grams of *Piper longum* powder (*Pippali Churna*) twice daily for three weeks for *Kaphaja Kasa* (productive cough) showed standard therapeutic efficacy with **zero adverse drug reactions (ADRs)** across comprehensive hematological and biochemical screening

Pippali work as bioenhancer

- A unique focus of *Piper longum* preclinical research is its role as a **scientific bioenhancer**. Studies show that piperine inhibits metabolic enzymes in the human gut (such as CYP3A4 and P-glycoprotein). This action safe-guards other co-administered medications or nutrients from breaking down too quickly, vastly **increasing their systemic absorption and bioavailability**

Ginger-

- **Binomial Name**: *Zingiber officinale* Roscoe
- **Family**: Zingiberaceae (The ginger family)
- **Synonym**: *Amomum zingiber* L.
- **Etymological Origin**: The generic epithet *Zingiber* tracks back through Greek *zingiberis* to the ancient Sanskrit root **Śṛṅgavera** (meaning "horn-root"), describing its horn-like branching growth habit.

Synonyms -**For Fresh Ginger (*Ardraka*)**

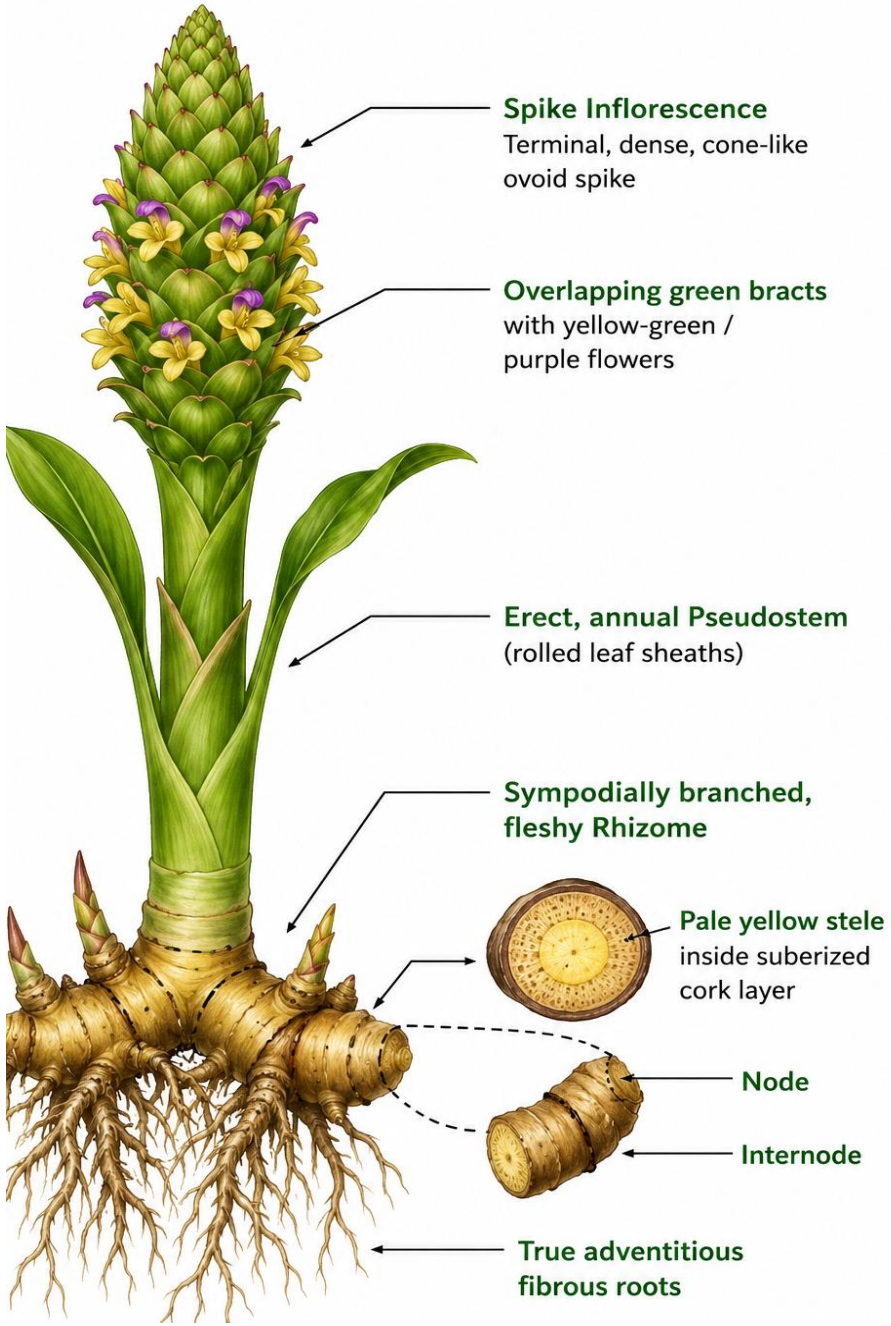
Ardraka	• Derived from *Ardra* (moist/wet); means "the wet or undried juice-rich rhizome".
Katubhadra	• *Katu* (pungent) + *Bhadra* (auspicious/good); translates to "that which yields beneficial, high-quality pungency".
Katukanda	• *Katu* (sharp/pungent) + *Kanda* (tuber/root-stem); means "the sharp-tasting subterranean bulbous stem".

For Dry Ginger (*Śuṇṭhī*)

Śuṇṭhī-	• "the dried or desiccated form" used specifically to calm aggravated intern humors (*Kapha-Vataja doshas*).
Viśvā / Viśvabheṣaja –	• *Viśva* (universal) + *Bheṣaja* (medicine); means "the universal panacea" or "world's medicine" due to its expansive healing footprint.
Nāgara –	• the urban or sophisticated elite among spices, marking its supreme status over other pungent herbs.
Śṛṅgavera –	• *Śṛṅga* (horn) + *Vera* (body); translates literally to "horn-shaped body", mapping directly to its antler-like structural layout.
Katugranthi –	• *Katu* (pungent) + *Granthi* (knotted/jointed structure); references the "pungent-tasting nodes and internodes"

Morphological features of ginger

Character	Important Morphological Features
Habit	Perennial, aromatic, herbaceous plant belonging to the family **Zingiberaceae**. Grows 0.6–1.5 m tall.
Habitat	Thrives in warm, humid tropical and subtropical climates. Prefers fertile, well-drained loamy soil rich in organic matter and partial shade.
Root	Numerous adventitious, fibrous roots arise from the rhizome. Some roots may develop into thick storage roots.
Rhizome (Underground Stem)	Thick, branched, fleshy, irregularly flattened, aromatic rhizome with distinct nodes and internodes. Covered with light brown corky skin and bears scale leaves and buds. The medicinally important part of the plant.
Stem	True stem is the underground rhizome. The aerial **pseudostem** is formed by tightly rolled leaf sheaths; erect, smooth, and green.


Spike Inflorescence
Terminal, dense, cone-like ovoid spike
Overlapping green bracts with yellow-green / purple flowers
Erect, annual Pseudostem (rolled leaf sheaths)
Sympodially branched, fleshy Rhizome
Pale yellow stele inside suberized cork layer
Node
Internode
True adventitious fibrous roots

Leaves	Simple, alternate, sessile, lanceolate to linear-lanceolate, 15–30 cm long, with entire margins, acuminate apex, and parallel venation. Leaves are arranged in two rows (distichous).
Inflorescence	Dense terminal or radical spike borne on a separate leafless stalk (scape). Bracts are green with overlapping arrangement.
Flowers	Bisexual, zygomorphic, yellowish-green with a purple or violet lip marked with yellow spots. Perianth consists of tubular calyx and corolla; one fertile stamen and a prominent labellum. Ovary inferior.
Fruit	A small, three-valved capsule containing several seeds; fruiting is uncommon in cultivated ginger.
Seeds	Small, black, and enclosed in a white fleshy aril; rarely produced in cultivated varieties due to vegetative propagation.
Propagation	Primarily propagated vegetatively by pieces of rhizome containing one or more viable buds ("eyes").

Key features

- Aromatic, branched **fleshy rhizome** with distinct nodes.
- Erect **pseudostem** formed by overlapping leaf sheaths.
- **Lanceolate leaves** with parallel venation.
- **Dense spike inflorescence** arising separately from the leafy shoots.
- **Yellowish-green flowers** with a characteristic purple labellum.
- **Fibrous adventitious roots** emerging from the rhizome.

Ayurveda Pharmacological features

Property	Fresh Ginger (Ārdraka)	Dry Ginger (Śuṇṭhī)
Rasa (Taste)	Katu (Pungent)	Katu (Pungent)
Guṇa (Qualities)	Laghu, Snigdha	Laghu, Rūkṣa
Vīrya (Potency)	**Anuṣṇa** (or mildly Uṣṇa according to some texts)	**Uṣṇa**
Vipāka (Post-digestive effect)	Madhura	Madhura
Doṣa effect	Pacifies Vāta and Kapha; less aggravating to Pitta	Strongly pacifies Vāta and Kapha; may increase Pitta if used excessively

Chemical Composition

Gingerols:	• The primary active compounds in fresh ginger responsible for its sharp, spicy flavor and strong anti-inflammatory effects.
Shogaols:	• Potent compounds formed when ginger is dried or heated, offering enhanced antioxidant and biological properties.
Zingerone:	• A compound produced during cooking that contributes to the root's sweet yet spicy aroma and health properties.
Zingiberene:	• The primary essential oil component that defines ginger's characteristic fragrance profile

Green ginger / fresh ginger drug actions according to Ayurveda

- Rochaka – appetizer
- Deepana – improves digestion strength
- Vrushya – aphrodisiac- Its juice is useful in Vata and Kapha disorders
- Vibandhara – remove constipation.
- Aggravates vata
- treats vitiation of pitta and rakta

fresh ginger drug actions

Fresh ginger with guda (jaggery)

- increase strength
- Alleviates vata ,kapha and Rakthaja disorders
- stimulates digestive fire
- loosens the stools,
- is a cardio tonic
- very hot in potency
- nourishes the dhatus and cures loss of voice

- Hrudya – • acts as cardiac tonic, congenial for heart
- Deepana – • improves digestion strength.
- Ruchida – • improves taste, useful in relieving anorexia
- Shophahara – • relieves swelling, edema, anti inflammatory actionsK
- Kaphahara – • balances Kapha, useful in productive cough
- asthmaKantamay aapaha – • Useful in throat disorders,
- Svarya – • improves voice

- Anahahara – relieves gas, fullness of abdomen,
- Shoolajit – relieves abdominal colic pain
- Bhedini – relieves constipation
- Jihva Vishodhana – cleanses and clears tongue, relieves white coating
- Kaphavatahara – Balances Kapha and Vata

- **Shwasahara –** useful in treatment of asthma and chronic respiratory disorders.
- **Kasahara –** useful in cough and cold
- **Vamihara –** relieves vomiting
- **Hikkahara –** relieves hiccups

Dry ginger actions

Deepana –	• improves digestion strength
Shophahara –	• relieves swelling, edema, anti inflammatory
Vatodara –	• Useful in ascites due to Vata Dosha imbalance, bloating
Shwasahara –	• useful in treatment of asthma and chronic respiratory disorders.
Panduhara –	• Useful in anemia,
Good for	• early stage of liver disorders
Shleepada –	• useful in Elephantiasis

Dry ginger

Being hot in nature	• it helps to absorb excess moisture especially in the intestines.
Vibandhanut –	• Breaks down stool particles into small pieces by its piercing qualities, relieves constipation
Amavataghni –	• useful in rheumatoid (effective to relieve dizziness, menstrual pain, arthritis pain, motion sickness andweight loss)

Research findings on ginger

Anti-Inflammatory & Analgesic (NSAID-like action):	• Gingerols inhibit the cyclooxygenase (COX) enzyme and suppress pro-inflamm pathways like NF-κB. This action mimics the mechanism of NSAIDs (like aspirin ibuprofen), reducing inflammation and muscle or joint pain without significant gastrointestinal damage.
Anti-Emetic (Nausea Relief):	• This mechanism suppresses the vomiting center in the brain, effectively mana nausea caused by pregnancy, motion sickness, and chemotherapy.
Prokinetic (Digestive Aid):	• Modern clinical trials demonstrate that ginger stimulates gastric motility, encouraging faster stomach emptying and relieving symptoms like dyspepsia a indigestion.
Metabolic & Cardiovascular Protection:	• Research shows ginger activates the Nrf2 signaling pathway to reduce oxidativ stress. This activity supports improved glycemic control, lowers blood pressure improves lipid profiles (cholesterol reduction) by inhibiting platelet aggregatio

Black Pepper

Botanical Name: *Piper nigrum*.L
Family : Piperracea
Sans. Name: Maricha
Sinhala Name : Gammiris

Black pepper - Medicinal Properties

- Rasa (Taste) - Katu (Pungent)
- Guna (qualities) - Laghu (lightness), Teekshna (strong, piercing), Sookshma - enters deep and minute body channels
- Vipaka- Katu - Undergoes pungent taste conversion after digestion.
- Veerya- Ushna - Hot potency
- Effect on Tridosha - Balances Kapha and Vata

Chemical constituents of pepper

Alkaloids & Amides:

- The principal bioactive alkaloid is **piperine** (responsible for pungency and bio-enhancement), accompanied by its isomers (**chavicine**, isopiperine).
- Other related amides include piperamine, piperettine, and pipericide.

Essential Oils (Volatiles):

- Makes up 0.4% to 7% of dried berries.
- Main components are **sabinene**, **β-caryophyllene**, α-pinene, β-pinene, 3-carene, and D-limonene.

Phenolics & Flavonoids:

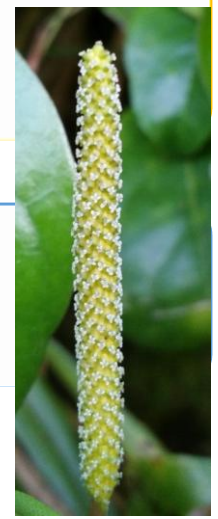
- Includes hydroxycinnamic and hydroxybenzoic acids, alongside antioxidant flavonoids like **quercetin**, **kaempferol**, and **lutein**.

Macronutrients & Minerals:

- Rich in carbohydrates, proteins, and fats.
- It is highly abundant in essential minerals such as potassium, calcium, magnesium, and iron.

Black Pepper actions according to Ayurveda comments

Na…ati Ushna –	• It is not very hot
Avrush ya – R…chik…	• It is anaphrodisiac
a…, Ruchya , …och…	• improves taste, relieves anorexia Because of its Chedana (cutting) and Shoshana) drying effects, • it increases digestion strength
Dosha	• balances Kapha and Vata Dosha - Causes increase in Pitta.



Vishama Jwara –

- It is used in treating recurrent fever

It is one among Pramathi herbs –

- It has scraping effect over the intestines, inducing cleansing effect.

It is orally

- amenorrhoea to induce periods.

Black pepper

- extract relieves fat deposition by blocking fat cell formation.

very

- useful in obesity management.

Black Pepper -Preclinical Research Findings (In Vitro & Animal Models)

Anti-Inflammatory & Analgesic:	• Rodent models (e.g., carrageenan-induced paw edema) show that piperine inhibits key inflammatory mediators like **(NF-kappa B), (COX-2), and (iNOS)**. • At doses of 10 mg/kg, it demonstrates pain-relieving effects comparable to standard NSAIDs like diclofenac.
Neuroprotection & Antidepressant Effects:	• Animal models of Alzheimer's and Parkinson's disease reveal that piperine improves memory deficits, reduces lipid peroxidation in the brain, and acts as a mild monoamine oxidase (MAO) inhibitor, boosting serotonin and dopamine levels.
Anticancer Mechanisms:	• In cell line studies, piperine induces apoptosis (programmed cell death) and suppresses the proliferation and migration of breast, colon, and prostate cancer cells. It alters the G1 or G2/M phases of the cell cycle to halt tumor cell duplication.
Metabolic Regulation:	• In high-fat diet rat models, *Piper nigrum* crude extracts lower total cholesterol, LDL, and triglycerides while simultaneously upregulating adiponectin levels to combat fatty liver changes

clinical trials

The Bioavailability Enhancer:

- Clinical trials conclusively prove that piperine alters human drug metabolism. It temporarily inhibits liver enzymes (like **Cytochrome P450**) and the intestinal efflux pump **P-glycoprotein**.
  - *Example*: Co-administering **20 mg of piperine** with **2000 mg of curcumin** (from turmeric) boosts curcumin absorption in humans by up to **2,000%**. It similarly improves the uptake of vitamins (Beta-carotene, B6), iron, and specific pharmaceutical drugs.

Metabolic Syndrome & Lipid Management:

- In randomized controlled trials (RCTs), an 8-week regimen of black pepper extract (or piperine combinations) significantly improved obesity parameters.
- Overweight subjects showed reductions in circulating LDL cholesterol, overall triglycerides, and fasting blood glucose

Antioxidant System Support:

- patients with metabolic syndrome show that a daily dose of piperine boosts serum levels of **superoxide dismutase (SOD)** while reducing **malondialdehyde (MDA)** and **C-reactive protein (CRP)**, proving a direct reduction in systemic oxidative stress and inflammation.

Gastrointestinal Motility:

- Clinical safety profiles show *Piper nigrum* alters human orocecal transit time, effectively stimulating digestive enzymes (pancreatic amylase, lipase, and trypsin) to optimize digestion

Application

- Fine powder of pepper (Piper nigrum) is administered in the dose of 1-2 gram, along with honey or betel leaf juice is used in chest congestion due to phlegm.

Endaru

- **Botanical Name**
  - ***Ricinus communis* Linn.**
- **Family**
  - **EUPHORBIACEAE**
- **Vernacular Names**

- Hindi: Erand
- English: Castor
- **Shukla Eranda**: The white stem/green leaf variety.
- **Rakta Eranda**: The red stem/reddish leaf variety.

Synonyms for *Eranda- R.Communis*

- **Panchangula :**"Five fingers". The leaves are palmate, deeply lobed, and closely resemble a human hand with five fingers outstretched.
- **Gandharva-hasta :**"Hand of a celestial musician (Gandharva)". This references the large, beautiful, and fan-like shape of its leaves.
- **Hastikarna :**"Elephant's ear". Denotes the unusually large, broad size of the castor leaves.
- **Deergha-danda :**"Long stalk". Describes the plant's long, hollow, and prominent leaf petioles.
- **Chitrabeeja**: "Mottled or painted seed". The seeds feature a highly distinct, spotted, and mosaic-like surface pattern.
- **Vyaghrapuchha :**"Tiger's or leopard's tail". Refers to the elongated, trailing shape of its flowering inflorescence
- **Vardhamana :**"Fast-growing". Captures the aggressive, quick growth habit of the shrub.

Morphology

Stem –

Erect, Herbaceous above and woody below

Leaf - Alternate, Broad, Palmately lobed gland dotted, green or reddish petiolate with reticulate venation

Flower – Monoecious

Inflorescence - A terminal venation

Fruit - Globose, explosively dehiscent, 3seeded capsule.

Fruits covered with short or long fleshy prickles

Seed - Carunculate, Endosperm is oily

Castor medicinal Properties

- Rasa (taste) - Madhura (sweet) Katu (pungent), Kashaya(Astringent)
- Guna (qualities) - Snigdha (oily, unctuous), Teekshna (strong, piercing), Sookshma (minute, enters minute body channels)
- Vipaka- Madhura
- Veerya - Ushna - Hot potency
- Effect on Tridosha - Balances Vatha
- Bulk of 95% of the castor seeds produced in India is utilized for extraction of oil.

Actions and indications

- Both are used to cure
  - inflammation,
  - migraine
  - severe pain; relieves pain in lower back and bladder region
  - abdominal disorders and fever.
  - It is also used to cure cough
  - Asthma
  - Leprosy
  - useful in rheumatoid arthritis.

Leaves of Ricinus and medicinal benefits

- pacify vata dosha
- cure cough
- worm infestation
- dysuria
- bleeding disorders.
- Tender Leaves
  - abdominal tumors and relieve bladder pain.

Fruit of this plant is hot in potency

- treat abdominal tumors,
- vata imbalance,
- enlarged liver and spleen,
- piles
- abdominal disorders.

Fruits are pungent in taste

stimulate digestive fire.

Seeds are best used in abdominal ailments and purgation

Castor root benefits

- all the substances
  - capable of aphrodisiac and Vata balancing effects,
- Udavartahara –
  - relieves bloating, gas distension in abdomen
- Pleehaghna –
  - useful in spleen disorders, splenomegaly
- Gulmahara –
  - useful in abdominal tumors
- Bastishoolahara –
  - relieves bladder pain
- Antravruddhinut –
  - useful in hernia
- Shonita Vikara –
  - relieves blood imbalance disorders

Castor root benefits

Shoshahara –	• relieves emaciation, dehydration
Shoolaghna –	• relieves abdominal colic pain
Margashodhana –	• cleanses gut
Shwasahara –	• useful in treatment of asthma and chronic respiratory disorders
Kasahara –	• useful in cough and cold
Anahahara –	• relieves gas, fullness of abdomen, bloating
Kati Basti Rujahara –	• relieves pain in lower back and bladder region.
Shiroruji –	• relieves headache
Mehahara –	• useful in urinary tract disorders and diabetes
Amavatahara –	• useful in rheumatoid arthritis

Root bark - Action

- has emetic & purgative action
- cures lumbago skin diseases
- Dyspnea
- Hydrocele
- Flatulence
- Piles
- Cough
- Headache
- Leprosy
- Arthritis
- Calculus & dysuria
- Fever
- Swelling
- Mental diseases
- Painful urination
- The seeds are useful in hepatitis.
- Tender leaves allay pains in the bladder.
- The roots are sweet, acrid, astringent, hot potency
- Carminative
- Purgative
- Anthelmintic
- Emollient
- Diuretic
- Aphrodisiac
- Galactagogue Sudorific
- Expectorant & depurative..

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- Which cures constipation, inflammations, fever, ascites, strangury, bronchitis, cough, leprosy, skin diseases, vitiated conditions of vata, colic, coxalgia & lumbago.
- Root bark used for emetic & purgative purposes, beneficial in lumbago & skin diseases

Part used, dosage

- Part Used- Root, leaf, Seed, Oil
- Dosage- Root power 3-5 g,
  - Decoction 50-100 ml;
  - seed 1-5gram,
  - Castor oil 5-10 ml
- Fatal dose - 5-10 crushed seeds
- Fatal period - 2 to several days

Clinical Research Findings (Human Studies)

FDA-Approved Stimulant Laxative:

- Castor oil is clinically proven and **FDA-approved for temporary relief of occasional constipation**. In the small intestine, pancreatic lipases break down the oil to release **ricinoleic acid**. This acid binds to **EP3 and EP4 prostanoid receptors** on intestinal smooth muscle cells, triggering a calcium surge that forces rapid bowel propulsion.

Bowel Preparation for Diagnostics:

- Clinical trials show it serves as an effective agent for clearing the bowels before medical procedures, such as capsule colonoscopies, occasionally helping to improve completion rates and polyp visibility.

Labor Induction

- Clinical data shows that castor oil can successfully stimulate uterine contractions. Because EP3 and EP4 prostanoid receptors are also present in the uterus, ingested castor oil enhances myometrial contractility. However, it is strictly restricted to low-risk, late-term pregnancies under professional medical supervision.

Dermatology & Skin Hydration:

- In clinical dermatology evaluations, topical castor oil functions excellently as an **occlusive moisturizer**.
- Its high density of monounsaturated fatty acids forms a protective barrier that seals moisture into the stratum corneum (the outermost skin layer).

The Hair Growth Debate:

- **There are no conclusive human clinical trials proving castor oil accelerates hair growth** or reverses baldness.
- Its actual clinical benefit in hair care is restricted to lubricating the hair shaft, which visibly enhances luster, traps moisture, and reduces breakage.

- **The Ricin Toxin**: Raw castor seeds, leaves, and seed husks contain **ricin**, a hyper-potent water-soluble glycoprotein. Ricin inhibits cellular protein synthesis and is highly toxic. Consuming just a few thoroughly chewed raw seeds can cause fatal hemorrhagic gastroenteritis and organ failure.
- **Safety of the Oil**: Commercial castor oil contains **zero ricin**. Because ricin is water-soluble and heat-sensitive, the oil-extraction and heat-processing phases completely separate and deactivate the toxin, making the final oil safe for human use.
- **Side Effects**: Clinical reports warn that oral overdoses cause rapid dehydration, severe abdominal cramping, and severe diarrhea. Topically, it may trigger acute allergic contact dermatitis in individuals with sensitive skin